

Synopses

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Childhood Obesity

Winner of the 2007 ANZSPD Post-graduate
Essay Competition



Dr Mary Apps

BDS Adelaide 2004

BScDent(Hons) Adelaide 2005

2nd year Post-Graduate Student, University of Sydney

Childhood obesity is a major public health concern. The prevalence of obesity is increasing rapidly in many parts of the world, including Australia and New Zealand. Over the past few decades the prevalence of obesity in children has risen greatly, a phenomenon that has been referred to as an 'international epidemic of childhood obesity' (Ebbeling, Pawlak et al. 2002). The prevalence of childhood obesity in Australia is among the highest for developed nations. Around 25% of Australian children are currently overweight or obese (Magarey, Daniels et al. 2001). For comparison, approximately 8% of Australian children were classified as overweight or obese in the 1960s (Booth, Chey et al. 2003). In the decade between 1985 and 1995, the level of obesity in Australian children tripled in all age groups and for both sexes. During this period, the proportion of obese boys aged 7-15 years increased from 1.4% to 4.7%, and the proportion of obese girls within the same age group increased from 1.2% to 5.5% (Magarey, Daniels et al. 2001). Recent data suggests that not only is the prevalence of childhood obesity in Australia increasing, but also that the rate of this increase is accelerating (Goodman, Lewis et al. 2002). The figures for childhood obesity in New Zealand are similar – approximately 25% of New Zealand children are considered overweight or obese (Drummond, Chia et al. 2007). A large study of Auckland school children published in 2001 reported that 14.3% of the study sample was obese (Tyrrell, Richards et al. 2001).

The longer-term consequences of obesity range from serious chronic medical problems to premature death. The UK Chief Medical Officer's report emphasised the seriousness of the situation, stating that childhood obesity "...threatens to reverse gains in longevity made during the last hundred years and in some cases could result in parents outliving their children" (UK Department of Health 2003). Obesity is a major risk factor for type II diabetes, cardiovascular disease, hypertension, stroke, and certain forms of cancer (Nishida, Shetty et al. 2004). Obese children are also at increased risk for fatty liver disease, obstructive sleep apnoea and orthopaedic problems (Vann, Bouwens et al. 2005). It is important to note that the health risks of excessive body fat are associated with a relatively small increase in body weight, not only with marked obesity (WHO 1999).

Dramatic increases in obesity-related type II diabetes are well-documented (Vann, Bouwens et al. 2005). Type II diabetes was once thought to only occur in adults, but it is becoming increasingly prevalent among children as obesity increases in younger age groups. Over 90% of people with type II diabetes are overweight or obese (WHO 1998). The global numbers of people with diabetes, mainly type II, are predicted to rise almost 50% in 10 years – from 151 million in 2000 to 221 million in 2010 (Nishida, Shetty et al. 2004).

In addition to physical diseases, childhood obesity also carries harmful social and psychological implications (Nishida, Shetty et al. 2004; Vann, Bouwens et al. 2005). Rates of depression in obese children are reportedly high. In fact, one study found that the self-reported quality of life of obese children was similar to that reported by children with cancer (Schwimmer, Barwinkle et al. 2003).

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Nina Vasan

President's Report

Firstly, Happy New year to everyone and I hope you all managed to get some well deserved R&R over the break.

Initially I thought our family would go away – fly or drive somewhere peaceful. Then I counted all the things I would need to take for our 20 month old toddler – buggy, car seat, port-a-cot; bottles (milk not beer!), nappies, dummies (yes, I use them and they have helped maintain my sanity), 12 changes of clothes for each day (very messy child), etc. I also reminded myself that she can't sit still while travelling by car or plane for more than three minutes, 39 seconds.

The last time I flew with her, she threw her dummy down the aisle which hit the head of an elderly man and then she scrambled to grab the Financial Times newspaper from the nicely dressed Armani suit man' sitting next to me! I would like to say that she is a highly gifted child and wanted to read the FOREX section of the paper, but that would be lying! Plus have you ever tried changing a nappy on an active baby with sore ears in the small aircraft toilet? (It helps if you have yoga or acrobatic flexibility). In the end, we decided to stay put in Auckland which was not too bad, as most residents vacated to their holiday homes and the weather was great.

Inaugural Meeting

Wellington hosted the first inaugural NZ branch meeting. It was fabulous, a special thanks to Erin Mahoney, Katie Ayers and Mary Anne Costelloe for helping to organise this event. It was a particularly special day as Bernadette Drummond received her Honorary Life Membership. This was in recognition for her immense contribution to Paediatric Dentistry in New Zealand and to ANZSPD (photos opposite page).

The day comprised a range of topics and speakers from branch members

and guest speakers including an endodontist and orthodontist. The format allowed informal discussions on various topics.

The use of MTA (Mineral trioxide aggregate) was discussed by Dr Scott Turner (Endodontist), in particular the biocompatibility properties of MTA which have resulted in its high success and popularity amongst Endodontists. The cost of the material and individual packets can be a limiting factor. However, Craig Waterhouse (dentist from Invercargill) informed me at the meeting that MTA could be purchased from another dental company as a bottle of powder, this being more cost effective. The next morning I received an email from Craig, with the product name (MTA Angelous, from GUNZ) cost, and order code. What efficiency! It's often the exchange of product information and practical tips between practitioners that really makes these meetings memorable.

Application of my new found knowledge – I managed to use MTA for an 11 year old patient with a grossly carious pulp exposed lower first permanent molar. Often I would consider extracting the tooth. However, her orthodontist requested the tooth be maintained at this stage. Once the caries and then superficial inflamed pulp tissue were removed, MTA was placed and the tooth prepared for a SSC. I found the initial handling of the material more difficult and tacky than calcium hydroxide. It will be interesting to see how the pulp responds. Providing full coronal coverage is obviously advantageous.

Learning

I came across a good commentary in Evidence Based Dentistry (2007; 8, 11-12) regarding a fairly recent paper* involving meta-analyses of previous studies to assess the clinical effectiveness and outcomes of

pulpotomies on primary teeth with MTA. The question asked was "Is mineral trioxide aggregate more effective than formocresol for primary molar pulpotomy?" In the paper the clinical and radiographic outcomes were compared to that of formocresol and found to be significantly better. However, the commentary from Evidence Based Dentistry carefully dissects the paper and the methodology in selecting studies. Some of the difficulties in comparing studies arise from factors such as lack of proper randomization, difference in follow up periods and difference in final restorations used (preformed metal crowns). For those interested in having a read the web link is:

<http://www.nature.com/ebd/journal/v8/n1/full/6400464a.html>

Sad times

Sir Edmund Hillary

Our nation grieved after the rugby world cup, but the All Blacks picked themselves up and moved on (some even moved to different countries). Another four years to get back on track, I'm confident 2011 will be our year!

On 11 January, New Zealand is grieving again with the loss of the iconic Sir Edmund Hillary. He is undoubtedly our most famous New Zealander, having conquered Mount Everest in 1953. He has had many accolades but dedicated his life to charity especially helping the people of Nepal. He was a man that truly lived life to the fullest, even after tragically losing his first wife and daughter in a plane crash. I have had the pleasure of treating two of his grandchildren, and during those times they have shared many funny stories of their grandfather and some of his journeys. They said he would always make sure he had his toothbrush and toothpaste (whitening toothpaste in more recent times) with him when he travelled. We

* Peng L, Ye L, Tan H, Zhou X. Evaluation of the formocresol versus mineral trioxide aggregate primary molar pulpotomy: a meta-analysis. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2006; 102:40-44

NZ Branch ANZSPD Meeting, Mac's Brewary Wellington – 1 December 2007



should all strive to live by his motto "be determined, aim high".

Professor David Kenny's Visit

I look forward to the visiting RK Hall lecture tour with Prof David Kenny. As I was preparing this report, I received news that David's daughter, Megan, tragically passed away from a medical complication. Our sincere condolences to David – our thoughts are with him and his family during this difficult time.

Ponder this

Life is a Bag of Frozen Peas

A few weeks after my first wife, Georgia, was called to heaven, I was cooking dinner for my son and myself. For a vegetable, I decided on frozen peas. As I was cutting open the bag, it slipped from my hands and crashed to the floor. The peas, like marbles, rolled everywhere. I tried to use a broom, but with each swipe the peas rolled across the kitchen, bounced off the wall on the other side and rolled in another direction.

My mental state at the time was fragile. Losing a spouse is an unbearable pain. I got on my hands and knees and pulled them into a pile to dispose of, I was half laughing and half crying as I collected them. I could see the humor in what happened, but it doesn't take much for a person dealing with grief to break down.

For the next week, every time I was in the kitchen, I would find a pea that had escaped my first cleanup. In a corner, behind a table leg, in the frays at the end of a mat, or hidden under a heater, they kept turning up. Eight months later I pulled out the refrigerator to clean, and found a dozen or so petrified peas hidden underneath.

At the time I found those few remaining peas, I was in a new relationship with a wonderful woman I met in a widow/widower support group. After we married, I was reminded of those peas under the refrigerator. I realized my life had been like that bag of frozen peas. It had shattered. My wife was gone. I was in a new city with a busy job and a son having trouble adjusting to his new surroundings and the loss of

his mother. I was a wreck. I was a bag of spilled, frozen peas. My life had come apart and scattered.

When life gets you down; when everything you know comes apart; when you think you can never get through the tough times, remember, it is just a bag of scattered, frozen peas. The peas can be collected and life will move on. You will find all the peas. First the easy peas come together in a pile. You pick them up and start to move on. Later you will find the bigger and harder peas. When you pull it all together, life will be whole again.

The life you know can be scattered at any time. You will move on, but how fast you collect your peas depends on you. Will you keep scattering them around with a broom, or will you pick them up one-by-one and put your life back together?

Michael T. Smith

Wishing you all a great start to 2008!!

Nina Vasan

Continued from page 1...

How is obesity measured in children?

Obesity can be defined as the disease in which excess body fat has accumulated to such an extent that health may be adversely affected (WHO and FAO 2006). There has been some debate over what is the best measure of obesity, particularly in the paediatric population. In the literature on adult obesity, the best available definitions of obesity and overweight are based on body mass index (BMI). BMI is defined as weight in kilograms divided by height in metres squared (kg/m²). The World Health Organisation defines a BMI of 25 or greater as overweight, and obesity is defined as a BMI of 30 or greater (WHO 1998). While these standards work well for adults, they do not apply to children because normal BMI changes throughout childhood. Instead, the Centers for Disease Control and Prevention classify children whose BMI is between the 85th and 95th percentiles for age and gender as being 'at risk' for overweight. Children who have a BMI equal to or above the 95th percentile are considered to be obese (CDC 2000). The majority of articles on childhood obesity define obesity and overweight in this way (Kantovitz, Pascon et al. 2006). The index of waist-to-height ratio (WHTR) has recently been proposed as a simpler method of measuring overweight and obesity in children. WHTR is more closely linked to childhood obesity related morbidity than is BMI (McCarthy and Ashwell 2006). WHTR is easier to calculate and may allow the same boundary levels for children and adults (McCarthy and Ashwell 2006). In addition to this, McCarthy et al. (2006) suggest the following as a simple public health message: 'Keep your waist circumference to less than half your height'.

What is causing the obesity epidemic?

Obesity is caused by a complex interaction between genetic predisposition and environmental trigger factors. However, the imbalance between declining energy expenditure due to physical inactivity and a high energy diet (excess calories whether from sugar, starches or fat) is the main determinant of the obesity epidemic. The obesity epidemic reflects the profound changes that have occurred in the behavioural patterns of communities over recent decades. Obesity is considered to be a 'social and environmental disease' (Nishida, Shetty et al. 2004). Much

research has been conducted by the World Health Organisation to identify the main factors which contribute to so-called 'obesogenic' environments. Some of the factors thought to contribute to childhood obesity are summarised in Table 1.

Decreased Energy Output

Children today are more likely to be driven to school (or to the bus stop) rather than walk. This may be due to: (1) an increasing number of families having access to a car, or often multiple cars; (2) the way in which communities are structured, such that children travel further from home to get to school; and (3) parental concerns regarding child safety. Thus a previously routine form of exercise has been lost (Vann, Bouwens et al. 2005).

Children now have fewer opportunities to be involved in sporting activities. Australian public schools once had stronger extra-curricular sports programs, but some children do not have physical education lessons during school hours anymore, let alone the opportunity to participate in after-school or weekend sport.

Due to safety concerns, many parents are reluctant to let their children play in the street with other children of the neighbourhood, as was common decades ago. In addition to this, many children who live in the busier cities do not have a backyard to play in. So it is unsurprising that children have become reliant on television, computer games, the internet, all sedentary pursuits, to entertain themselves.

Once television programs for children were only televised in the after-school time slot and on Saturday mornings. However, the advent of pay-TV channels has resulted in many households having access to children's programs all day every day. When

children watch a lot of TV they tend to snack more often, especially on foods that are high in fat and sugar. Studies published in the US have found that the odds of a child being overweight are 4.6 times greater for individuals watching five hours of television daily than for those watching fewer than two hours daily (Palmer 2005).

Increased Energy Intake

Food is now a commodity that is traded in a global market, whereas once the food market had an essentially local base. Changes in the world food systems have contributed to shifting dietary patterns, for example, increased consumption of an energy dense diet high in fat and simple carbohydrates (Nishida, Shetty et al. 2004). Previous experiments in humans have demonstrated that total energy intake increases when the energy density of the diet is increased, regardless of whether the increased energy density is due to the addition of sugars or fat (Mann 2003).

Many of the foods that are marketed directly to children are highly processed and high in fats and free sugars. For example, many breakfast cereals and snack foods with poor nutritional profiles are heavily marketed to children, often with misleading claims of health benefits aimed at parents. Advertising directly affects the food choices of children, who now have far more disposable income than they did several decades ago and much greater influence on their parent's buying habits (Nestle and Jacobson 2000). A recent US study revealed that children aged between 8 and 12 years are exposed to an average of over 50 hours of food advertising a year (Ganz, Schwartz et al. 2007).

There are many opportunities in daily life for purchasing food and drink – an abundance of fast-food restaurants

Table 1. Factors thought to contribute to childhood obesity

Energy output	Energy intake
Increased use of motorised transport	Greater quantities and varieties of energy dense foods available
Decreased opportunities for regular physical activity	Intense marketing and promotion of energy dense foods targeted at children
Increased sedentary recreation	More frequent and widespread food purchasing opportunities
TV channels offering children's programs at all hours	Rising use of soft drinks and juices to replace water

and soft drink vending machines ensures that individuals are never far away from an immediate source of relatively non-nutritious food (Nestle and Jacobson 2000). Many school canteens sell soft drinks, chocolates and other unhealthy foods. In addition to this, there are many more vending machines, some of which are located on school property. Not all supermarkets offer confectionery-free check-outs, and unhealthy snacks are often located at a height that is appropriate for catching the attention of younger children who are sitting in the trolley while a parent does the shopping.

Once soft drinks were consumed only on special occasions. However, soft drinks and juices are increasingly becoming the staple beverage of many children, replacing water and milk. Drinks that are high in sugar increase the overall energy intake by limiting appetite control. A sweet drink will not produce the satiety that an equivalent amount of calories in a solid fibre-containing food would produce. Accordingly, there is less of a compensatory reduction of food intake after consumption of high sugar drinks than when additional foods of equivalent caloric value are added to the diet. A study published in 2001 demonstrated that children with a high consumption of (non-diet) soft drinks are more likely to be overweight and more likely to gain excess weight (Ludwig 2001). A randomised trial published in 2002 demonstrated a higher energy intake and a progressive increase in body weight when drinks rich in free sugars, rather than energy-free artificially sweetened drinks, are consumed. Diets limited in added sugars have been shown to reduce total energy intake and induce weight loss, even when participants are encouraged to replace sugars with starches and non-starch polysaccharides (Mann 2003). Although fruit juices with no added sugar may represent an excellent source of nutrients, overconsumption of juices may also contribute to excess calorie consumption (Palmer 2005).

A relationship between childhood obesity and caries

To date there have been conflicting reports regarding an association between caries and obesity (Kantovitz, Pascon et al. 2006; Drummond, Chia et al. 2007). Some studies have reported a positive association between BMI and caries experience (Larsson, Johansson

et al. 1995; Reifsnyder, Mobley et al. 2004; Willershausen, Haas et al. 2004; Hilgers, Kinane et al. 2006; Bailleul-Forestier, Lopes et al. 2007; Marshall, Eichenberger-Gilmore et al. 2007). However, other studies have actually reported a negative association, such that individuals with high caries experience had lower BMI (Ayhan, Suskan et al. 1996; Acs, Schulman et al. 1999; Macek and Mitola 2006). Numerous studies have reported no association between caries and obesity (Moreira, Rosenblatt et al. 2006; Drummond, Chia et al. 2007).

More research is required into the association between childhood obesity and dental caries. However, it is obvious that some of the behaviours that are known to be obesogenic are also cariogenic. Consider the following scenario:

A seven year old boy catches the bus home from school everyday and usually watches about three hours of TV before dinnertime. During the commercial breaks he helps himself to biscuits, chips or muesli bars from the kitchen cupboard and pours himself a glass of lemonade or juice.

This behaviour puts him at increased risk of....what? For members of the dental profession the instinctive answer would of course be caries. However, the correct answer would clearly be caries and obesity. So perhaps the relationship between childhood obesity, type II diabetes and caries is that the diseases share a number of risk factors (Palmer 2005). The same environmental and behavioural patterns that are causing more children to gain unhealthy amounts of weight can also contribute to caries. However, it should not be forgotten that both caries and obesity are complex, multifactorial conditions. Accordingly, while an unhealthy behaviour may produce obesity in one child, the same behaviour patterns may result in caries in another child. That is to say that obesity and caries will not always be observed in the same individuals.

Caries and obesity coexist in children of low socioeconomic status (Marshall, Eichenberger-Gilmore et al. 2007). It is well-known that caries experience is unevenly distributed, with a minority of children carrying a disproportionate burden of the disease experience. In fact, in young Australian children, 90%

of the caries experience is found in about one-fifth of the population (Armfield 2005). The relationship between socioeconomic status (SES) and dental caries parallels similar relationships between socioeconomic status and obesity. Although there are conflicting reports regarding the association between obesity and SES, many of the studies conducted in developed nations show an inverse relationship between SES and obesity (i.e. lower SES associated with higher body weight), which is particularly pronounced in women (Parsons, Power et al. 1999). Longitudinal studies suggest an inverse relationship between SES in childhood and weight status in adulthood (Parsons, Power et al. 1999). A recent Australian study reported that there is a general trend for children of lower SES to be at greater risk of obesity (Sanigorski, Bell et al. 2007).

Implications for the dental profession

As members of the health profession we have a strong interest in the general health of our patients. Members of the dental profession are potentially well-placed to identify children who are obese or overweight, or who are at risk of becoming so. The fact that a clinician may see a child, along with their caregiver and sometimes other siblings, at regular intervals for dental examinations provides an opportunity to notice changes in weight over time and recognise family patterns. As most dental clinicians already discuss dietary patterns in terms of caries risk, patients generally accept that the discussion of diet is a part of the dental profession's role. Just because a child is free of caries does not mean that their family will not benefit from basic dietary advice, particularly if there is a pattern of overweight or obesity in the family. Fundamental principles such as reducing snacking frequency and eliminating or reducing sweet drinks are consistent with reducing the risk of both caries and obesity. However, referral to a paediatrician is indicated for children who have a significant weight problem. It is very important that some of the principles applied to adult obesity not be applied to childhood obesity. For example, weight maintenance, rather than weight loss, is often the aim for children so that the child will ultimately 'grow into' their weight without being placed on a heavily restrictive diet.

Obesity is not just an individual problem – it is a societal problem and should be tackled as such (WHO 1999). Given the scope of the obesity problem, community-based and policy-based initiatives are required to prevent, decrease and manage obesity. Perhaps the only positive aspect regarding shared risk factors for obesity and caries is that money spent on interventions aimed at reducing obesity may indeed benefit children's teeth too. It is important for the dental profession to have a broader understanding of the factors contributing to the childhood obesity epidemic, and to contribute in terms of health policy initiatives. The dental profession must have an active role in determining the dietary guidelines presented to the public, as it is imperative that all health care practitioners are in agreement over the messages being given to parents. For example, some of the studies on weight gain have favourably reported on the replacement of soft drinks with diet soft drinks in schools. However, encouraging diet soft drinks would obviously be an inappropriate message when issues such as dental erosion are considered. The messages given on diet and lifestyle changes must be consistent, because conflicting information and confusion will only discourage families from complying with recommendations.

Significant initiatives that influence the food supply are needed to make healthy choices easier. Statutory measures are required to improve the quality of the food marketed for children and end commercial activities which directly promote obesogenic and cariogenic food and drinks to children. As children spend a significant part of their lives at school, interventions aimed at schools should be supported. For example, healthy lunch order and water only policies should be encouraged and vending machines banned from school grounds. Simple concepts such as "walking school bus" programs should be encouraged (TravelSmart 2007). Programs such as the Good Start Breakfast Club also must be supported. [The Good Start Breakfast Club is an Australian Red Cross initiative in which volunteers serve breakfast every day for school children who live in low SES areas (Australian Red Cross 2007)].

All health professionals have a major role to play in promoting the benefits of a healthy diet and an increase in habitual physical activity and a

decrease in inactivity. There is great potential for members of the dental team to further help our patients and their families by having an awareness of the complex issues relating to the childhood obesity problem and recognising opportunities for prevention and intervention.

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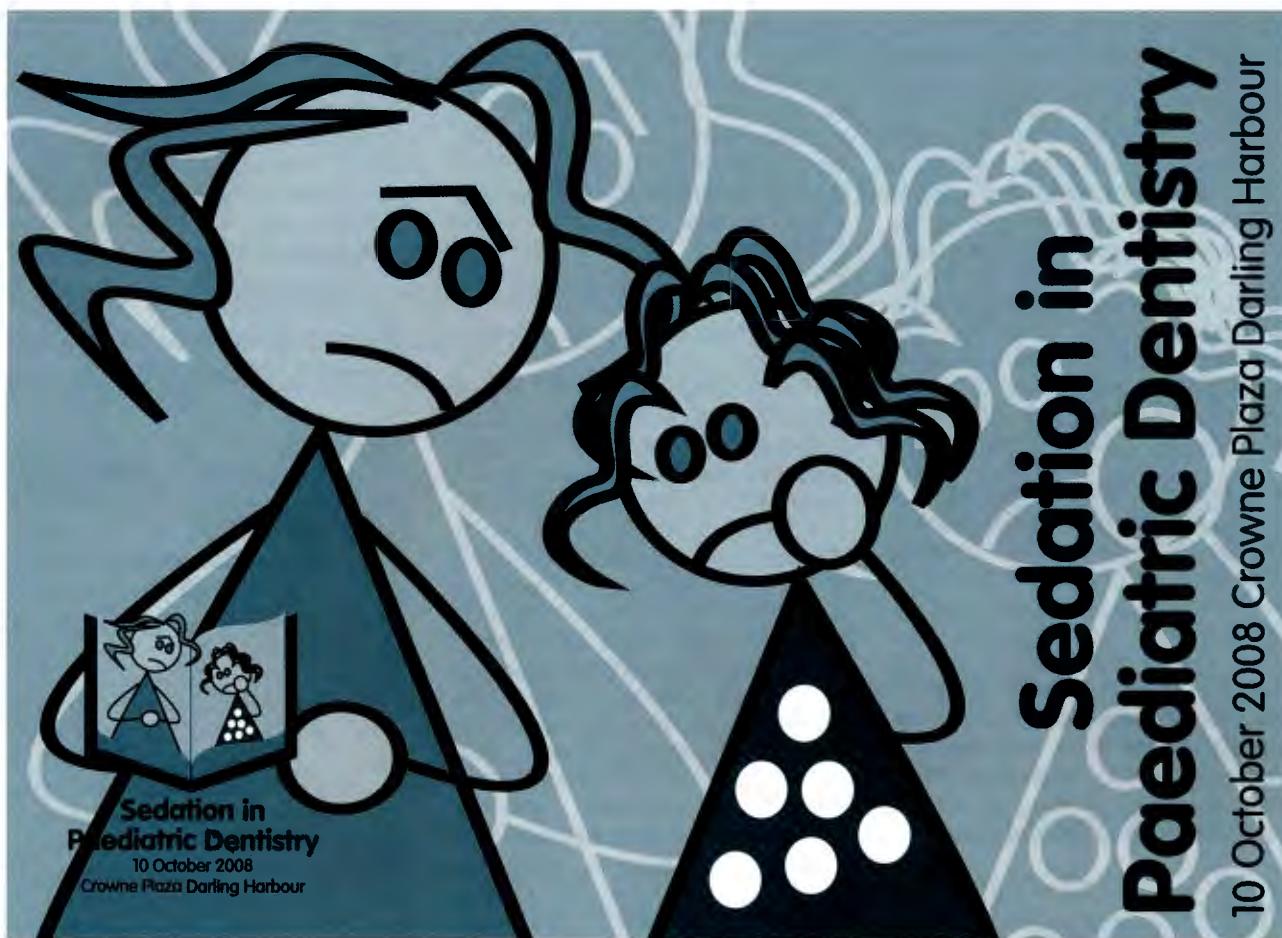
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Sedation in Paediatric Dentistry Seminar • 10 October 2008 • Sydney Australia

The Organising Committee, Dr Eduardo Alcaino and Dr Peter Wong, are proud to host the inaugural "Sedation in Paediatric Dentistry" Seminar to be held at the Crowne Plaza, Darling Harbour, Sydney on 10 October 2008.

This seminar aims to provide delegates with:

- A definition of sedation and the forms of sedation available
- Information to dispel the myths and misconceptions concerning sedation
- Training from a world renowned Paediatric dental sedationist
- Details on the rules and regulations governing sedation in Australasia
- Education on the forms of sedation you can safely perform in practice
- Current information on morbidity and mortality concerning dental sedation.

Speakers & Themes

The Organising Committee is pleased to confirm that **Prof Stephen Wilson** of the Cincinnati Children's Hospital Medical Center (USA) will be the Keynote speaker at the 2008 event. A/Prof Doug Stewart, Head of the Sedation and Pain Control Unit at Westmead (WOOH), paediatric dentists and other medical specialists will also be sharing their expertise.

Clinical and didactic areas to be covered will include:

- Child development & behaviour management
- Case reports & Adverse reactions
- Guidelines, monitoring, providers of sedation in AUS
- Mortality and Morbidity in Paediatric Dentistry
- Definition of Sedation, Informed Consent, and Assessment of the Paediatric Patient
- Drugs used in Oral Sedation, Relative Analgesia, and new research in paediatric dental sedation

Who Should Attend?

The seminar is expected to attract over 100 participants. If your practice involves the treatment of children, or have patients treated under sedation then you must attend this seminar. This seminar is open to dentists, registrars, and all auxiliaries who have an interest in treating children or who already treat patients under some form of sedation.

For more information and to express your interest:

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Aspects and Management of Autism Disorder of Interest in Paediatric Dentistry

Nymphia Shekaran, BDS (Otago)

3rd Year Post-Graduate Student, University Of Melbourne

Doctor of Clinical Dentistry (Paediatric Dentistry) and Honorary Dental Officer, Royal Children's Hospital, Melbourne

Introduction

The American child psychiatrist Leo Kanner first described Autism disorder (AD) in 11 children whose behaviour was obviously different from others.¹ Kanner suspected that they had an inborn feature, which impaired their ability to form social contacts.¹ Autism disorder is now recognized as a complex neurodevelopmental disorder characterised by severe impairment in reciprocal social interaction and communication, and a pattern of repetitive or stereotyped behaviour.

Incidence

For most of its 64 year history, autism has been considered a rare disorder with an estimated prevalence of four per 10,000 children.² However, current prevalence figures vary from the original four to almost 60 per 10,000 children, depending on the place, country and population from which the estimate is derived.² Recent prevalence reports from Victoria (Australia) reveal a range of estimates from 27-54 per 10,000.³ Males are 4-5 times more affected than females although females are more likely to exhibit severe mental retardation.⁴

Clinical Features and Diagnosis

Autism disorder is characterised by abnormal emotional, social and linguistic development.⁴ Children with AD are commonly known to have impairment in their social interaction and practice repetition in their actions and behaviours.⁵ The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV, TR) includes AD in the broader category of pervasive developmental disorders (PDD), along with pervasive developmental disorder, not otherwise specified (PDDNOS), Asperger's disorder, Rett's disorder, and childhood

disintegrative disorder.⁶ The term autism is used interchangeably with the DSM-IV, TR term autistic disorder.⁶ The diagnostic criteria for AD require the presence of six or more symptoms from three categories: impaired reciprocal social interaction (at least two symptoms), impaired communication, and restricted, repetitive, or stereotyped behaviors.^{6,7} These criteria reflect the central role of deficits in social behavior in children with AD.^{6,7}

Parents are important aids in diagnosing AD as they are usually the first to be concerned about the impaired communication, lack of social relationships, imaginative play, and to a lesser extent, hearing impairment and delay in attaining milestones or a regression after successfully attaining them. Early detection (18-40 months) is very important as early initiation of educational and behavioural treatment can be extremely effective, with long lasting benefits of these children and families.⁸ But despite evidence that early detection is possible at 18 months or younger, many children do not receive the final diagnosis till they are much older.⁹ It is recommended that primary child-care providers target children at risk- those with language delay – in order to ensure that more children are diagnosed early.^{10,11}

Aetiology and Co-existing Medical Conditions

Autism disorder is a heterogenous neurodevelopmental disorder associated with abnormalities in the brain structure and function. Characteristic findings include: a reduced number of Purkinje cells in the posterior inferior regions of the cerebellar hemispheres, truncation of the dendritic tree development of neurons in the limbic system and hypoplasia of cerebellar lobules VI and VII.¹² Using magnetic resonance

imaging, the size of the brainstem structures, the entire cerebellar vermis and their components was found to be significantly smaller in the autistic group than in a control group.¹² With age, the size of all the brainstem structures increased in both groups 'relatively smoothly' indicating that these deviations were not a result of a progressive degenerative process but rather an early pre- or peri- natal insult.¹² Prenatal factors such as chromosomal abnormalities, intrauterine viral infections, or metabolic disorders may be important in the pathogenesis of AD.¹³ Recent evidence suggests that parental age and obstetric conditions (e.g. birth weight and duration of gestation, interpartum hypoxia) may be associated with increased AD.¹³

Multiple indices support a genetic basis for AD. Twin studies found a high concordance rate in monozygotic twins compared with dizygotic twins.^{14,15} Anomalies in almost every chromosome have been reported in individuals with autism, although more consistent linkage findings have been associated with chromosomes 2q, 7q, and 15q.¹⁶

Autism has been associated with many genetic syndromes, including Down syndrome, Angelman syndrome, de Lange syndrome, Smith-Magenis syndrome, and Smith-Lemli-Opitz syndrome.^{17,18} From 7%-8% of individuals with autism have fragile X syndrome.¹⁹

Pharmacotherapy

Risperidone (Risperdal[®]) may be used to manage tantrums, aggression, and self-injurious behaviours. Methyl-phenidate hydrochloride (Concerta[®], Ritalin[®]) may be used to manage inattentive, impulsive, and hyperactive behaviours in children with autism.^{20,21} Some children with AD show abnormalities in the serotonin neurotransmitter system

in addition to core deficits in social interaction and communication.⁷ To date, there is insufficient evidence to support the use of selective serotonin re-uptake inhibitors, α2-adrenergic agonists, or mood stabilizers, despite reports of their effectiveness in managing target behavioural symptoms in some children with autism in short-term trials with small sample sizes.²²⁻²⁴ Psychotropic medications are generally used only in conjunction with behavioural educational and habilitative therapies.²⁵

Implications for Dental Management

Characteristics of children and adolescents with AD

The main challenge to the dental team may be the reduced ability of autistic individuals to communicate and relate to others.^{26,27} Further problems include impaired intellectual development, repetitive body movements, hyperactivity, limited attention span, and a low frustration threshold that may lead to temper tantrums or bizarre vocalization.²⁶ There are reports that individuals with AD exhibit tactile and auditory hypersensitivity, and may have exaggerated responses to light, touch and odours.⁴ The dental team should be prepared for unpredictable and unusual responses to sensory stimuli.^{28,29} Children with AD tend to dislike changes in their environment and need sameness and continuity; they may react with tantrums over small environmental changes.^{28,29} Different physical conditions that present include knee jerk, poor muscle tone, and poor muscle coordination.²⁹ If the oral musculature is involved, drooling and reduced masticatory abilities can result, which can lead to a tendency to pouch food instead of swallowing.^{26,29}

A higher degree of lateral vision in children with AD has been reported.³⁰ The dental team should avoid all lateral movements towards the patient as these can be potential distractors.³⁰

The dental environment

Many strong stimuli are produced in the dental clinic that may elicit an adverse reaction from the patient. The sensory overload and internal state of the hyperarousal that many autistic individuals experience—even in normal settings—may in an upsetting situation

lead to impulsiveness, ritual behaviour, and withdrawal as defense mechanisms.³¹ It has been shown that an ascetic physical environment effectively decreased those negative behaviours and therefore the authors speculated that austerity and order in the surrounding setting would have a soothing effect on the patient.³² Translating this to the dental environment, it is rather unrealistic to demand a specially designed clinic for autistic patients; however, it may be feasible to examine and treat the autistic patient in a quiet, shielded single clinic versus an open-bay arrangement, with reduced decoration and dimmed lights.^{32,33}

The patient's need for continuity may require several visits to the dental office prior to the dental appointment to familiarize the autistic patient with the department and clinic and to establish a routine.²⁹ Gradual, slow exposure to the dental environment with non-threatening contact is recommended.^{26,27,29,34}

Appointment structure

Because of the autistic child's limited attention span, short, well-organized appointments should be planned and the waiting time should not exceed 10-15 minutes to avoid upset.^{26,27,34} To address the autistic child's preference for sameness and aversion to change, a routine should be established by maintaining days, times and personnel for each dental visit. Anyone participating in the procedure should minimize movements because the autistic child is distracted easily.²⁸

Clinical management considerations

Parents of children with AD are often the most valuable source of information regarding their child's typical behaviours, likes and dislikes. Carefully listening to the parents is a key element in gaining the child's trust, which in turn will help greatly in gathering data, planning for the dental appointment and tailoring the dental appointment to suit the child/adolescent.³⁵ The parent interview can be a part of the initial visit or a part of the pre-visit interview.

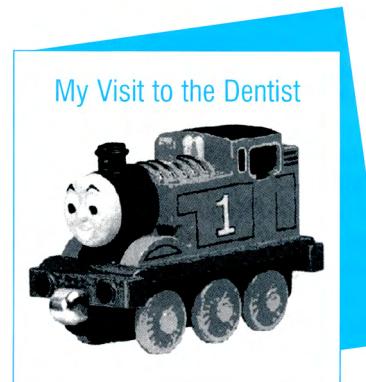
Suggestions for preparation of a photo book

Clinical aids that may help in acclimatisation of the autistic child to the dental environment include a 'photo book' containing pictures of the

department, the dental team and the dental chair or even include sequential photos of the path from the car park to the dental chair. This enables 'desensitization' to the new environments or stimuli that may otherwise be stressful to the child. This book may be prepared in advance after the pre-visit interview, following suggestions by the parent and can be personalized to the child. (Figure 1). Children with AD can use the photo book to familiarize themselves to the new stimuli that may present at the first dental visit prior to their visit. A copy of the child's personalized photo book can be kept in the dental records and may be an important tool in aiding the dental team to maintain the same routine and set up the dental operatory in a similar way at each visit to keep with the autistic child's preference for sameness.

Figure 1

An example of the cover of a 'photo book' cover prepared for a child with AD who liked Thomas™ – the tank engine



Oral health status and dental needs

Shapira and co-workers evaluated the periodontal status and caries status of autistic children and young adults.³⁶ The authors found that institutionalized autistic individuals had a higher frequency of and more serious periodontal problems than institutionalized schizophrenics, but exhibited a lower caries rate. The periodontal status and caries rate of autistic children in day care facility were similar to that of their peers. The most common dental services needed included: scaling, surgical periodontal procedures, and oral hygiene and nutritional instructions.³⁶ Lowe and Lindemann reported that their patients with AD showed a significantly higher caries index than the control group.³⁷ However on recalls, the autistic group did not show greater increase in caries rate than the control group.³⁷

In summary, more authors find caries susceptibility and prevalence of periodontal disease not remarkably different from non-autistic individuals and maybe even lower.^{30,34,36,37} Authors observing an increased caries susceptibility attribute this to a preference for soft and sweet food, poorer masticatory ability and pouching of food.^{27,29} Thus, prevention of dental disease is of paramount importance. All efforts should be directed to providing oral hygiene instructions, preventive regimens and modifying existing cariogenic dietary habits. To achieve this, the parent/ caretaker must be encouraged to be actively involved. The special family situation adapted to raise a child with extraordinary needs, requires an empathetic approach from the dentist, and the family's concerns and worries must be addressed adequately and respected.^{29,37}

Self-injurious behaviours

Self-injurious behaviours (SIB) occur in 4-5% of the individuals with different psychiatric conditions, especially those with AD, schizophrenia, and brain damage.³⁷ Over 70% of autistic patients may show self-injury at some time in their lives.^{38,39} A change in daily routine may initiate or increase this. Self-injurious behaviours may range from self-pinching or scratching to severe self-biting or head banging, the aetiology for which is often unclear. The interpersonal dynamics (family, patient/clinician) must be understood to determine the therapeutic approach. Suggested therapeutic approaches consist of reinforcement of behaviour that does not cause self-injury, rewarding the conduct frequently, distracting the patient from an undesired action, and inserting a pre-fabricated splint that may act as a temporary distracter. In extreme cases, SIB may warrant extraction of teeth to avoid loss of tissue.

Synopsis

With the increasing prevalence of children diagnosed with autism, dentists are likely to see many children with this disorder in their practice.^{2,35} As dentists, we must be compassionate when providing care to children with autism, and to their family members when they request assistance in the preventive aspects of dental care. Our expectations as dentists, however, must be tempered by the realization that the patient's preventive dental needs

constitute only a small component of their total need.³⁵ Families are often exhausted by the need for constant supervision and care of children with AD and may be unable to comply with dental hygiene requests.³⁵ Lastly, dentists and staff members also must be aware that parents of children with AD may have social or behavioral abnormalities or deficits in problem-solving skills that impede the collaborative treatment process.³⁵

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Colgate Smiles – ages 2-5: Designed to be the perfect first toddler brush in three fun designs featuring favourite Warner Brothers cartoon characters! The multi-height soft bristles ensure that all first teeth can be reached and cleaned, and the small, soft oval head is gentle on children's young gums.



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Colgate Smiles – ages 5+: Children are now able to brush their teeth unaided so parents need to be sure that the brush does the job. Colgate Smiles 5+ has multi-height bristles and a comfortable handle with thumb grip and cushioned handle to hold steady in wet hands. It is the only children's brush to feature a gentle tongue cleaner, to encourage good habits.

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Clinical Tip

I enjoy the fragrance of aromatherapy oils in my practice, and have recently bought an electric vaporizer which I am very pleased with. It has the advantage that there is no naked flame as in a normal oil burner, is tidy and does a great job of filling the room with a lovely smell. It just plugs in, and has an on/off switch (like an electric blanket). I use locally produced lavender aromatherapy oil drops in water in the bowl. These burners are available through Health Shops and cost about NZ\$60.



by Dorothy Boyd

Who are our postgrads and what are they up to?

The University of Sydney Master of Dental Science (Paediatric Dentistry) Postgraduate students 2008

SECOND YEAR



Dr Susan Hsieh
BDS Sydney 2002

Susan graduated in 2002 from Sydney University, and spent a few years in general practice in Canberra, before deciding upon specialisation. She now finds herself in second year in Paediatric Dentistry, researching the late effects of antineoplastic therapy on dental hard tissues and saliva, in survivors of childhood cancer.

Hypothesis 1. It is hypothesised that the late dental effects of current radiotherapy and chemotherapy protocols in survivors of childhood cancer are less severe than effects ten years ago. 2). The severity of late dental defects is related to the modality of treatment i.e. cranial irradiation, head and neck irradiation or chemotherapy.

Methods: This study aims to assess the late dental effects of current radiotherapy and chemotherapy. The late effects of this study will be compared with known rates of dental abnormalities in the general population as well as the results of a similar study carried out with survivors of childhood cancers in 1994. The results between the three groups of treatment modalities will be compared. Hence, it will be a cohort study, with a retrospective comparison group.

The study group will comprise of survivors of childhood cancer at the Children's Hospital Late Effects Clinic, who had received treatment before 14 years of age, more than five years after active treatment.



Dr Thuy Huong Nguyen
BDS Melbourne 2003

Thuy is a 2nd year post-graduate student at University of Sydney. After completing her undergraduate degree at the University of Melbourne in 2003 she returned to Sydney and worked in private practice for two years followed by the residency program at Westmead Dental hospital. Her research project is a cross sectional study investigating the oral health of Vietnamese preschool aged children in NSW.

The study aims to determine the prevalence of dental caries in a sample of Vietnamese children aged 2-4 years. All participants in the study will have a dental exam and parents/ carers will be asked to complete an interview schedule looking at feeding and oral health practices. Participants will be recruited from child care centres in metropolitan Sydney. The results from this study will be used to design a culturally specific oral health promotion program.



Reena Bhatt
BDS Sydney (2002)

Following graduation from the University of Sydney in 2002, Reena began clinical practice as a dental officer at Westmead Dental Hospital. Through the Hospital she gained experience in various specialty departments as well as clinics in rural NSW; while also doing part-time work in private practice. Having always enjoyed working in the Paediatric department she started the Masters in Paediatric Dentistry program in 2007 and is now in her second year of the course. Her research project involves the effect of Bisphosphonates on the oral health of children.

Aim: The purpose of this study is to collect baseline data from the cohort of children receiving prolonged intravenous Bisphosphonate therapy at the Children's Hospital in Westmead so that the effect of this treatment on craniofacial growth and development can be monitored, and the incidence of any future adverse effects can be recorded in a database. In addition, we wish to set up this database so that these children can be monitored for signs of "Bisphosphonate Related Osteonecrosis of the Jaws" and to develop guidelines for dental therapy of children receiving intravenous bisphosphonates both during and after their treatment.

Methods: For this study, we wish to obtain a record of the position and status of teeth present and the occlusion at baseline by recording findings of a clinical examination, taking colour photographs of the teeth and taking dental impressions of children who have received, or are receiving, long-term IV Bisphosphonates. An OPG and bitewing radiographs will also be obtained. A database will be created to document relevant information and to allow long term surveillance of the oral health of these children.



Dr Mary Apps
BDS Adelaide 2004
BScDent(Hons) Adelaide 2005

Mary is currently in her second year of the Paediatric Dentistry program at the University of Sydney. She completed her undergraduate training at the University of Adelaide, and then worked in a family dental practice in Adelaide for a couple of years after graduation. She completed an honours degree at the University of Adelaide under the supervision of Professor Grant Townsend. Her honours research

related to tooth size and asymmetry in normal and low birth-weight twins and was published in the journal *Twin Research*.

Mary was the secretary of the ANZSPD SA branch in 2006, but was somewhat preoccupied with studying for her RACDS primary exams and embarrassingly forgot about the last meeting of the year. (Once again, sincere apologies to any ANZSPD SA members for any inconvenience caused!)

Dr Erin Mahoney is supervising Mary's current research, which involves developing a new clinically useful and simple index to record molar incisor hypomineralisation (MIH). MIH is defined as the developmentally-derived hypomineralisation of 1 to 4 permanent first molars that is frequently associated with affected permanent incisors. A number of indices have been used to record MIH previously. Accordingly, there is difficulty in comparing and interpreting the prevalence figures reported by some studies due to the different indices and criteria used. The objective of this research is to enable standardisation, allowing for clarity in communication, which is of great clinical value to the dental practitioner. It is hoped that the index will be useful for both clinical and epidemiological settings, providing a quantitative method for measuring, scoring and analysing MIH in individuals and populations.

The project began with analysis of existing medical and dental indices, including indices that have been widely adopted as well as lesser-known indices, some of which were primarily intended for epidemiological use. Then, after considering the features of successful indices, an index for MIH was designed.

The index is currently being tested and refined. (Thank you to some of the New Zealand ANZSPD members who have already used this index and have provided helpful feedback.) The index will be further assessed for inter-examiner and intra-examiner reproduc-

ability, and further trials of the index are planned for 2008. Larger clinic trials will then be implemented.



**Dr Helen Fung
BDS Sydney 2002**

Helen is currently undertaking her second year of Paediatric Dentistry in Sydney. She completed her BDS at the University of Sydney in 2002 before working in various clinics in the Hunter New England Area. After working in various adult and child clinics in the Hunter region, she decided that children were much more interesting to work on. Helen is currently researching if dental treatment under general anaesthesia normalises growth.

Hypothesis: Children with early childhood caries undergoing dental rehabilitation under general anaesthesia demonstrate significant improvement postoperatively in percentile weight and height gain.

Methods: Children between the ages of 3 to 6 years referred to the Westmead Centre for Oral Health, Paediatric Dentistry Department High Risk Caries Clinic for assessment and management of early childhood caries will be recruited for this study. Data will be collected at the initial consultation, at the time of the dental general anaesthetic, as well as at the six month follow-up appointment for this longitudinal study. A survey containing questions about the dietary factors related to dental caries, as well as social and behavioural risk factors will be completed by the accompanying adult at each of these contacts with the patient.



**Dr Michele Tjeuw
BDS Sydney 2001**

Michele Tjeuw graduated from Sydney University in 2001 and has since worked at the Westmead Centre for Oral Health and also private general practice. She is now in her final year of the MDSc program.

Her research looks at the effect of temporary restorations on carious first permanent molars. μ CT is used to visualise and quantify of carious dentine following pre-treatment of photo-activated disinfection (PAD) and glass ionomer cement (GIC).

Objectives: The aim of this study was to characterise the mineral density of carious dentinal lesions using X-ray Micro-Computerised Tomography. The mineral density of untreated carious lesions and those pre-treated with PAD and GIC were investigated.

Methods: Carious first permanent molars were scanned using μ CT alongside hydroxyapatite discs with known densities. These images were viewed in three dimensions. Mineral gradients throughout the lesion were quantified using an equation derived from the hydroxyapatite discs and compared to elastic modulus measured using UMIS.

Results: Mineral gradients throughout carious lesions were obtained. The mineral densities are GIC $> 3.00(\text{gcm}^{-3})$, sound enamel $> 2.75(\text{gcm}^{-3})$, tertiary dentine $0.95-1.14(\text{gcm}^{-3})$ and secondary dentine $1.34-1.54(\text{gcm}^{-3})$ respectively. Similar trends in mineral gradients occur in untreated and pre-treated dentinal lesions which were validated using UMIS.

Conclusions: μ CT can be used to visualise teeth in 3-D. This technique can be used to visualise and quantify the mineral content and gradients through carious dentine in selected areas of interest.

THIRD YEAR



ANZSPD Federal Secretary-Manager's Report

Here is a photo of me presenting a cheque to John Rose who is the Principal of the Sacred Heart School at Beagle Bay, north of Broome in Western Australia. The cheque is for the sum of AU\$11,670.00. This cheque represents the proceeds of the art auction conducted at the final dinner of the Broome ANZSPD Convention May 2007. Of course, the art works were all done by the children of the school, and these works now adorn the walls of some distant clinics, surgeries, waiting rooms and homes in Australia and New Zealand. Maybe those who purchased them might like to let us know where they have the works hanging, and perhaps provide a photo?

Regards,

Alistair Devlin



Official Opening of the Michael Bubb Memorial Dental Training Laboratory at the University of Papua New Guinea, Port Moresby



Clockwise from top left:

UPNG dental student enjoying the newly opened dental training laboratory

Dr Rabbit and Dr Brushwell join in the celebrations!

Lenore Tuckerman (Colgate Australia) speaking at the official opening with Jon Pittar (GM Colgate PNG) and Dr Clement Malau, (Secretary for Health) seated

UPNG dental student enjoying the newly opened dental training laboratory

Colgate® Corner

by Lenore Tuckerman
Scientific Affairs Consultant

lenore_tuckerman@colpal.com



Official Opening of the Michael Bubb Memorial Dental Training Laboratory at the University of Papua New Guinea, Port Moresby

For the past twenty years, the University of Papua New Guinea, Division of Dentistry has been unable to conduct courses in dentistry. As such, in a country of six million people with over 700 language groups and only 10% employment, the oral health of the country is in serious decline.

Recognising the importance of public / private partnerships and with an ongoing commitment to oral health care, Colgate-Palmolive has generously provided significant funds to re-open the Dental Training Laboratory at the University of Papua New Guinea.

It was extremely fitting that this newly refurbished facility be known as the "Michael Bubb Memorial Dental Training Laboratory" in recognition of Michael who was tragically killed in a plane crash whilst traveling in Papua New Guinea on 17 June 1999.

I know that many of you will fondly remember Michael during his time heading up the Professional Oral Care business in Australia, which he began in 1990. In addition to being an outstanding businessman, he also had the uncanny ability to be able to hold meaningful conversations with everyone, from the Deans of Faculties of Dentistry to people working in our toothpaste factories. Bubby also had many close friendships with many members of the Australian dental profession, particularly the ANZSPD.

In 1996, Michael left Australia to take up the position of General Manager for Colgate-Palmolive in Papua New Guinea. He did so with a sense of excitement and there is no doubt that he embraced the challenges and the lifestyle.

It was a great honour for me to be invited to speak about Michael and his close relationship with the dental profession at the official opening of the clinic on 15 February 2008 in Port Moresby.

The opening was attended by Dr Clement Malau, Secretary of Health, Professor Ross Hynes, Vice-Chancellor of the University of PNG and Professor John Vince, Deputy Dean of the Division of Medicine. Michael's wife, Leigh was invited to officially open the facility. Michael's two children Hannah, 16 and Lachlan, 14 as well as Michael's sister Meredith and her husband, David were also in attendance.

In conclusion, I would like to quote the last paragraph of my speech,

"I feel sure that Michael would feel greatly honoured to have this training laboratory named after him. It is a fitting combination of two of the aspects of his life that he clearly loved – working with the dental profession, particularly dental students and his time spent in Papua New Guinea."



Lachlan, Leigh and Hannah Bubb with Lenore Tuckerman



UPNG dental students with Hannah and Lachlan Bubb



Official Opening of the training laboratory

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Coming events

22-26 May 2008
61st AAPD Annual Session
Washington DC

29 May-1 June 2008
9th EAPD Congress
Dubrovnik, Croatia

10-12 July 2008
6th Conference of Pediatric Dentistry
Association of Asia
Berjaya Times Square Hotel and Convention
Centre
Kuala Lumpur, Malaysia

10 October 2008
Sedation in Paediatric Dentistry
Crowne Plaza Darling Harbour, Sydney

21-25 May 2009
62nd AAPD Annual Session
Honolulu, Hawaii

16-20 June 2009
22nd IAPD International Congress
International Congress Centre
Munich, Germany

28-31 March 2010
16th Biennial Congress of ANZSPD
Queenstown, New Zealand

27-31 May 2010
63rd AAPD Annual Session
Chicago, Ill

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Federal President

Dr Nina Vasan
email: nvasan@xtra.co.nz

Federal Secretary Manager

Dr Alistair Devlin
email: devlins@iinet.net.au

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Editor Synopses

Dr Dorothy Boyd
dorothy.boyd@phsouth.co.nz

Correspondence

Dorothy Boyd
The Editor, Synopses
57 Hanover Street
PO Box 5144
DUNEDIN, NEW ZEALAND

Printing and distribution

Colgate®

Colgate Oral Care
Level 15, 345 George Street
Sydney NSW 2000
AUSTRALIA

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All text for inclusion in Synopses must be submitted to the editor on floppy disk, zip disk, CD, or by email. Both PC and Mac formats are accepted. Media will not be returned. Address email to dorothy.boyd@phsouth.co.nz. Please enclose your contact details and email address with all submissions.

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